

Application No.: 10/780,849
Amendment under 37 CFR 1.111
Reply to Office Action dated April 8, 2005
August 8, 2005

AMENDMENTS TO THE SPECIFICATION

Please substitute the paragraph beginning at page 19, line 18 and ending at page 20, line 16 to read as follows:

-- Fig. 7A shows a structure including an active layer 704, a semiconductor layer 703 having a ridge stripe, an insulating layer 709 provided on both side surfaces and at both sides of the ridge stripe, a first electrode 705 covering the side surfaces and an upper surface of the ridge stripe, and a second electrode 706 on the first electrode 705. If the lower layer of the first electrode is formed of a multilayer metal film to be alloyed by heat treatment, such as a Ni/Au film, the multilayer structure of the lower layer of the first electrode is changed by heat treatment. At this moment, this reaction proceeds not only inside the lower layer of the first electrode, but also at the interfaces between the lower layer and the semiconductor layer and between the lower layer and the upper layer of a platinum group metal to form active interfaces. Since the upper layer of the first electrode is formed of a platinum group metal, oxygen in the system is expelled through the interface between the upper layer and the lower layer because of the catalysis of the platinum group metal. Thus, the amount of oxygen or ambient air

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involved in a reaction inside the lower layer or a reaction between the lower layer and the semiconductor layer is appropriately controlled, so that the interface between the upper layer and the lower layer (designated by a heavy line) is stabilized. Thus, the platinum group metal upper layer of the first electrode functions as a cap layer for stably alloying the underlying lower layer by heat treatment. --